FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 22 to April 28, 2012 (Week 17)

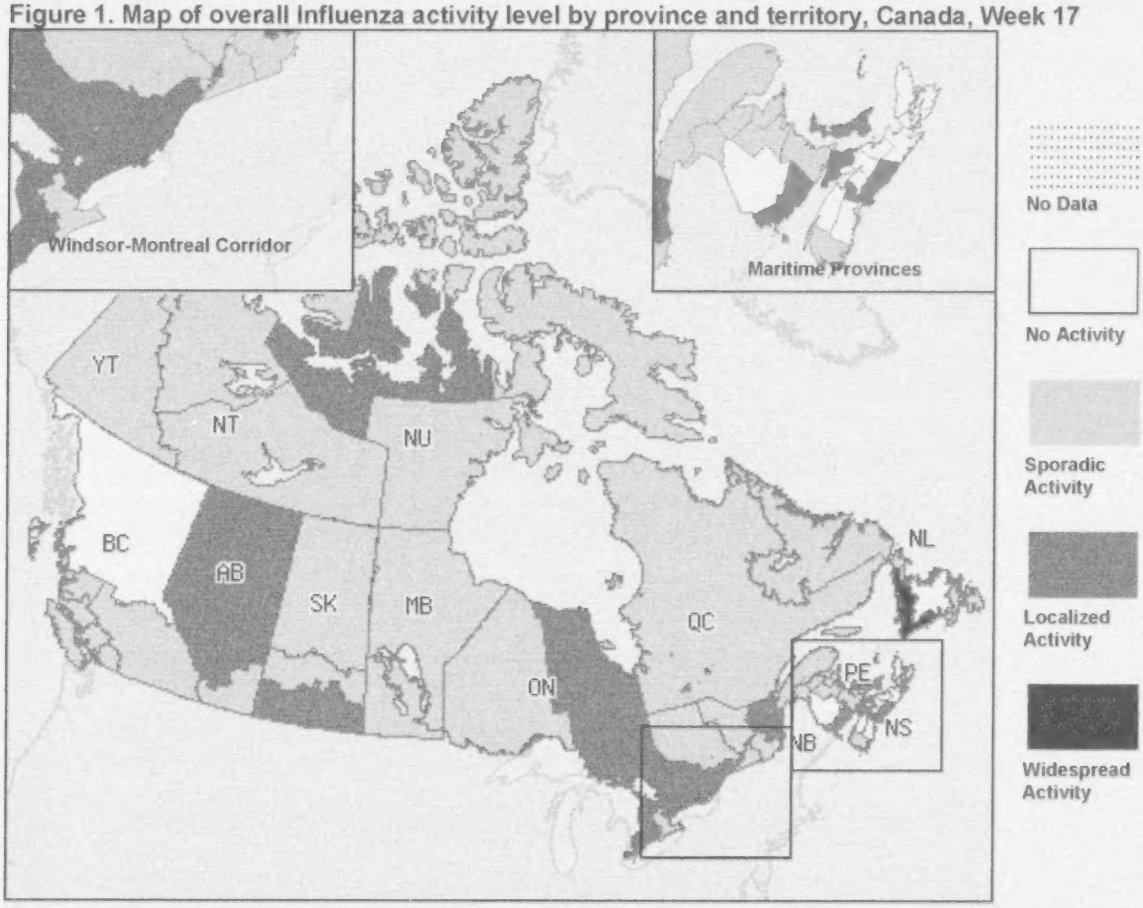
Overall Influenza Summary

- Overall, influenza activity in Canada continues to decline; however, several regions are still reporting elevated influenza activity (i.e. in the Atlantic Region, Quebec, Ontario, and the Prairies).
- Twenty outbreaks of influenza or ILI were reported this week (8 in LTCFs, 6 in schools and 6 others).
- In week 17, 524 laboratory detections of influenza were reported (11.1% - A(H3); 6.1% - A(H1N1)pdm09; 15.6% - unsubtyped and 67.2% influenza B). To date this season, influenza B remains the predominant virus type circulating in provinces east of Saskatchewan.
- Fifty-one influenza-associated hospitalizations were reported this week (13 paediatric through IMPACT surveillance and 38 adult through aggregate surveillance)
- The ILI consultation rate increased compared to the previous week but remains within expected levels.

Influenza Activity (geographic spread) and Outbreaks

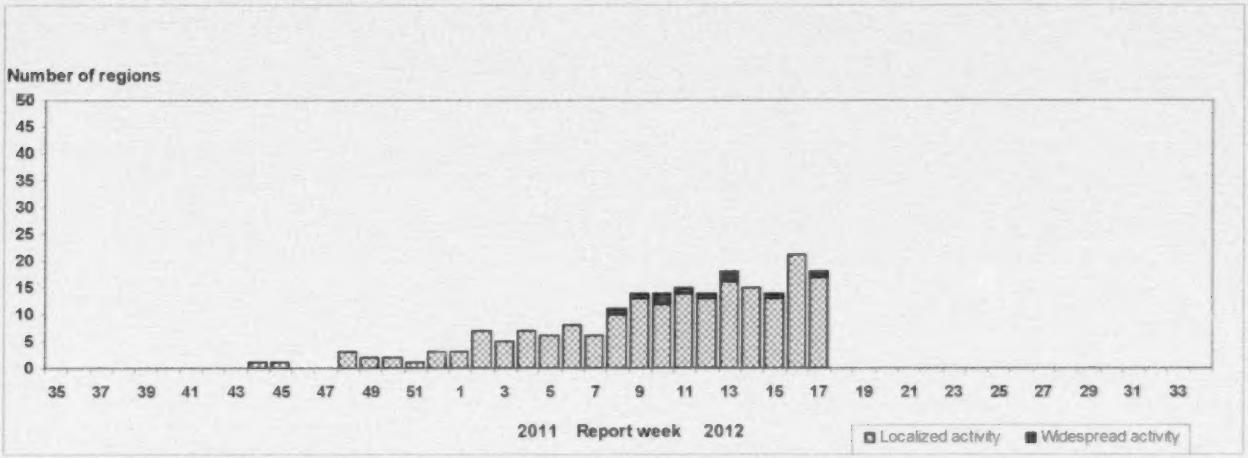
In week 17, 1 region (within NL) reported widespread activity, 17 surveillance regions (within AB, SK, ON, QC, NS, NB, PEI & NU) reported localized activity and 29 regions (within all provinces and territories except in PEI) reported sporadic influenza activity (see Figure 1). Twenty outbreaks of influenza or ILI were reported this week: 8 in long-term care facilities (1 in SK, 5 in ON & 2 in QC), 6 in schools (2 in AB, 2 in NB, 1 in NS & 1 in PEI) and 6 others (2 in AB, 1 in ON 1 in NS & 2 in NL) (Figure 3).

Figure 1. Map of overall influenza activity level by province and territory, Canada, Week 17



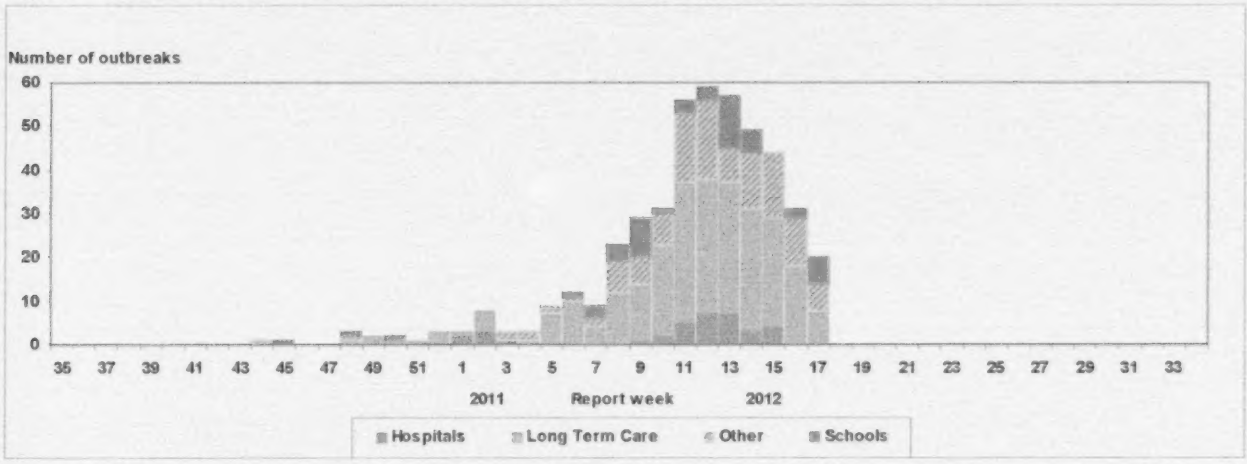
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012



Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests continued to decline this week and was 15.2% (524/3,447) (Figure 4 & 5). The proportion of positive detections for both influenza A (5.0%) and influenza B (10.2%) declined compared to the previous week. To date this season, influenza B remains the predominant virus type circulating in provinces east of Saskatchewan.

Cumulative to date of influenza virus detections by type/subtype is as follows: 47.8% influenza A (40.6% - A(H3); 19.0% - A(H1N1)pdm09; 40.4% - unsubtyped) and 52.2% influenza B (Table 1).

Detailed information on age and type/subtype were received on 9,047 cases to date this season (Table 2). The proportions of cases by age group are as follows: 21.2% were < 5 years; 17.9% were between 5-19 years; 22.2% were between 20-44 years; 15.3% were between 45-64 years of age; 23.1% were >= 65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (26%) and those >=65 years of age (24%). The largest proportion of influenza B cases were under 20 years of age (47%).

In week 17, the percentage positive for other respiratory viruses remained similar to the previous week : RSV-6.3%; parainfluenza-1.5%; adenovirus-1.8%; hMPV-3.8%; rhinovirus-9.4%; and coronavirus-1.9% (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012

Reporting provinces	April 22 to April 28, 2012						Cumulative (August 28, 2011 to April 28, 2012)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	13	0	8	0	5	6	545	0	437	90	18	96
AB	66	0	31	21	14	21	1263	0	985	220	58	189
SK	10	0	4	0	6	7	504	0	315	47	142	69
MB	1	0	0	0	1	21	69	0	9	6	54	213
ON	19	0	6	5	8	112	889	0	225	478	186	2467
QC	41	0	1	0	40	126	1711	0	57	92	1562	1963
NB	18	0	7	6	5	48	80	0	24	32	24	288
NS	1	0	1	0	0	4	15	0	10	1	4	92
PE	0	0	0	0	0	4	3	0	2	1	0	42
NL	3	0	0	0	3	3	74	0	30	10	34	201
Canada	**172**	**0**	**58**	**32**	**82**	**352**	**5153**	**0**	**2094**	**977**	**2082**	**5620**

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012*

Age groups	Weekly (April 22 to April 28, 2012)					Cumulative (Aug. 28, 2011 to April 28, 2012)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	19	3	6	10	21	930	208	331	391	985
5-19	8	0	3	5	32	529	75	267	187	1092
20-44	16	8	0	8	27	1197	267	435	495	815
45-64	14	2	3	9	27	817	170	276	371	569
65+	32	0	18	14	46	1126	66	688	372	966
Unknown	1	0	1	0	0	18	6	11	1	3
Total	90	13	31	46	153	4617	792	2008	1817	4430

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012

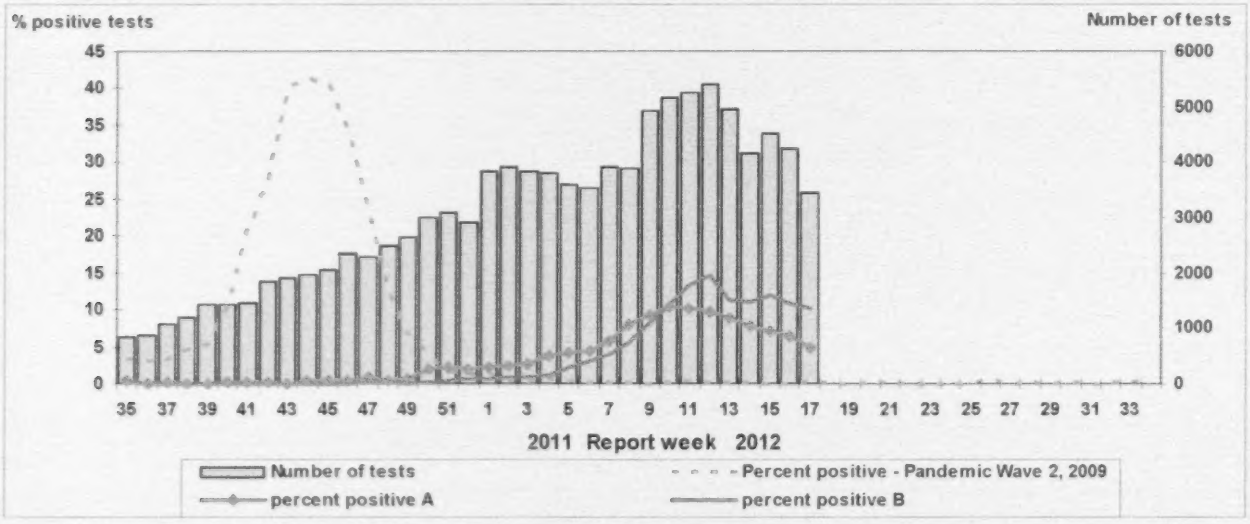
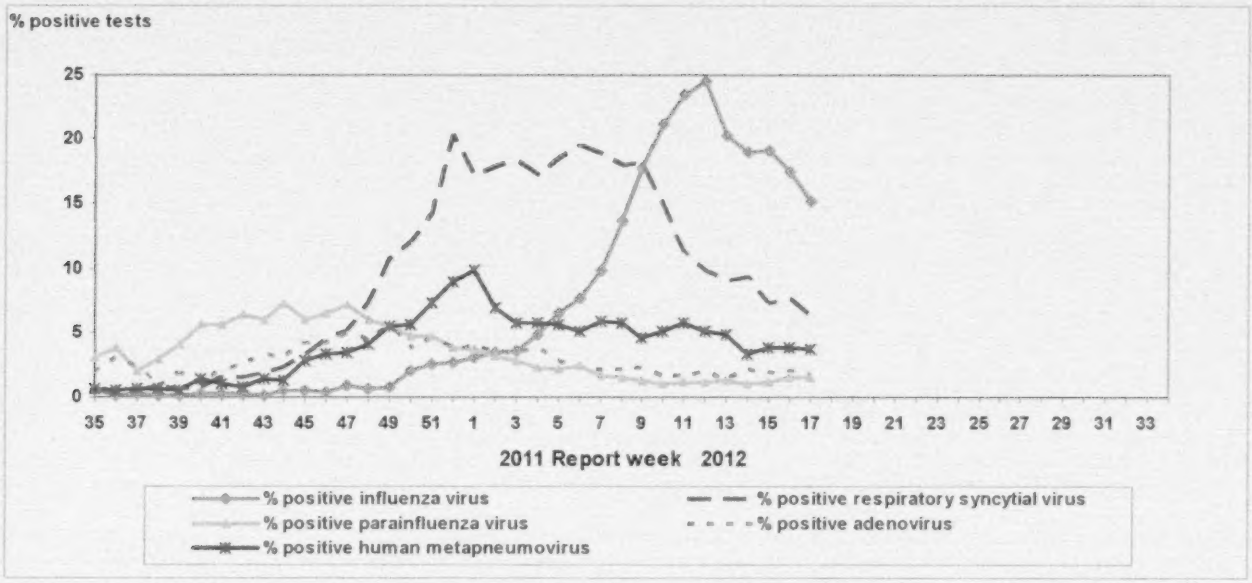


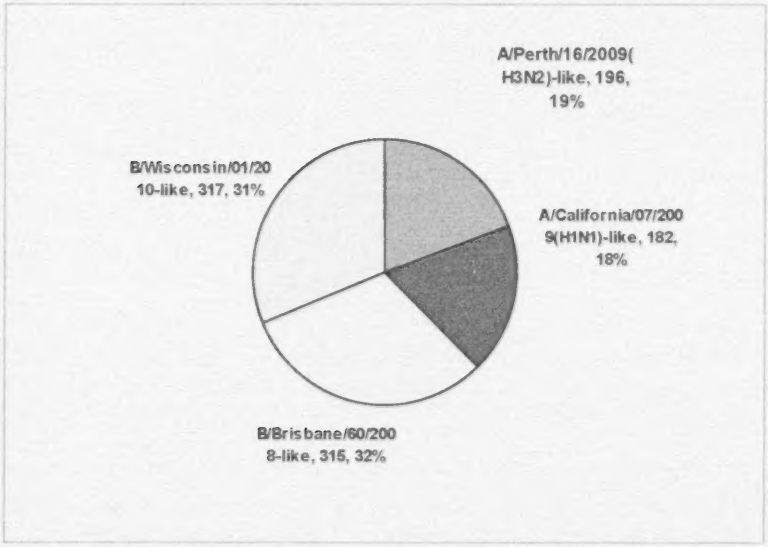
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012


% positive tests
25
20
15
10
5
0
35 37 39 41 43 45 47 49 51 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2011 Report week 2012
% positive influenza virus
% positive parainfluenza virus
% positive human metapneumovirus
% positive respiratory syncytial virus
% positive adenovirus

Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 1,010 influenza viruses (196 A/H3N2, 182 A/H1N1 and 632 B). Of the 196 A/H3N2 viruses (from BC, AB, SK, MB, ON, QC, NS & NT), 177 (90.3%) were antigenically similar to A/Perth/16/2009 while 19 (9.7%) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 182 A/H1N1 viruses characterized (from BC, AB, SK, MB, ON, QC & NB), 177 (97.3%) were antigenically similar to A/California/07/2009 and 5 (2.7%) viruses tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 632 influenza B viruses characterized, 315 (49.8%) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 315 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 317 (50.2%) influenza B viruses (from BC, AB, SK, MB, ON, QC, NB, NS & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 1,010


A/Perth/16/2009(H3N2)-like, 196, 19%
B/Wisconsin/01/20 10-like, 317, 31%
A/California/07/200 9(H1N1)-like, 182, 18%
B/Brisbane/60/200 8-like, 315, 32%

Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

Antiviral Resistance

Since the beginning of the season, NML has tested 990 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and 989 for zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 591 influenza A viruses (328 H3N2 and 263 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012

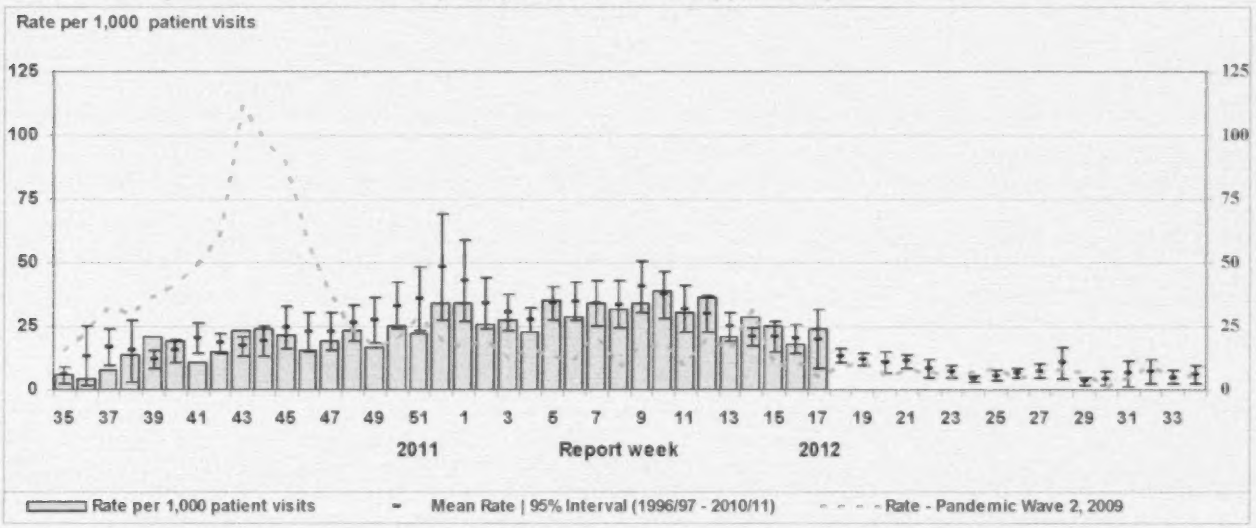
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	191	0	190	0	328	327 (99.7%)
A (H1N1)	198	0	197	0	263	263 (100%)
B	601	0	602	0	NA*	NA*
TOTAL	990	0	989	0	591	590 (99.8%)

* NA – not applicable

Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate increased from the previous week (23.9 ILI consultations per 1,000 patient visits in week 17) but remains within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed children under 5 (48.2/1,000 visits) and in those between 5 to 19 years old (29.6/1,000 visits).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 17, 13 new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Four hospitalizations were due to influenza A (unsubtyped) (in QC & NL) and 9 were due to influenza B (in ON, QC & NL). One paediatric death was reported in week 17 (in AB) and was associated with influenza B infection.

To date this season, 524 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 230 (43.9%) were due to influenza A and 294 (56.1%) were due to influenza B.

The proportion of cases by age group is as follows: 14.9% among infants <6 months of age; 20.4% among children 6-23 months of age; 31.1% were between 2-4 years; 23.1% were between 5-9 years; and 10.5% were between 10-16 years. To date this season, 5 influenza-associated paediatric deaths have been reported through the IMPACT network; all associated with influenza B infection.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

Influenza Hospitalizations and Deaths (Aggregate Surveillance System)
In week 17, 67 new laboratory-confirmed influenza-associated hospitalizations were reported of which 29 (43.3%) were in those < 20 years of age and 38 (56.7%) in those ≥ 20 years of age; 32.8% due to influenza A and 67.2% due to influenza B. The hospitalizations were reported from AB (11), MB (5), ON (47), NS (1) and NL (3). Of the 67 hospitalizations, 4 required admission to ICU (2 in AB & 2 in MB) and 2 were associated with influenza B infection. In week 17, 2 influenza-associated deaths were reported (1 in ON & 1 in AB); both deaths were associated with influenza B infection (1 was a pediatric death and the other was of unknown age).

To date this season, 1,439 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT). The largest proportion of cases was observed in those > 65 years of age (32.5%). Influenza B (55.6%) continues to be the predominant influenza type among hospitalized cases compared to influenza A (44.4%); of those influenza A hospitalizations where subtype was available, influenza A(H3N2) predominated (58.4%). There have been 62 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 32.3% were in those < 20 years of age and 67.7% were in those ≥ 20 years of age. To date this season, 80 influenza-associated deaths have been reported (from AB, SK, MB, ON & NS) of which 1.3% were of unknown age, 7.5% were among those < 20 years of age and 91.3% in those ≥ 20 years of age. Of the adult deaths, 78.1% were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 yea. , of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

International Influenza Updates

WHO: No new updates have been provided by the WHO since April 27, 2012. *World Health Organization influenza update*

United States: During week 16, influenza activity declined nationally and in most regions of the United States, however remained elevated in some areas. In week 16, the proportion of tests positive for influenza viruses increased compared to the previous week (22.2% or 662/2,987); the majority (74.2%) were positive for influenza A viruses, however the proportion positive for influenza B virus detections increased. Since October 1, 2011, the CDC characterized 1,291 influenza viruses: 343 A/H1N1, 745 A/H3N2 and 203 B. Of the 343 A/H1N1 viruses characterized, 337 (98.3%) were A/California/7/2009(H1N1)-like and 6 (1.7%) showed reduced titers with antiserum produced against A/California/7/2009. Of the 745 influenza A/H3N2 viruses that were characterized, 606 (81.3%) were A/Perth/16/2009-like and 139 (18.7%) showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 203 influenza B viruses that were characterized, 85 (41.9%) were B/Brisbane/60/2008-like (B/Victoria lineage) and 118 (58.1%) belonged to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 1.3%, which is below the national baseline. Widespread influenza activity was reported in 4 states, 10 states reported regional influenza activity, 14 states reported localized influenza activity, while the rest reported either sporadic or no activity. Three influenza A-associated paediatric deaths were reported to CDC in week 16 but occurred in week 10, 13 & 14. To date this season, 18 influenza associated-pediatric deaths have been reported. *Centers for Disease Control and Prevention seasonal influenza report*

Europe: In week 17, influenza activity, including iLI consultation rates and laboratory detections for influenza viruses, continued to decline in the WHO European Region. Influenza A(H3N2) viruses continued to dominate, followed by influenza B and with relatively few A(H1N1)pdm09 viruses reported. Of the 308 ILI/ARI samples tested in week 17, 56 (18.2%) tested positive for influenza, of which 57.1% were for influenza A and 42.9% for influenza B. Since week 40, 1,855 influenza viruses have been characterized antigenically: 29 were A/California/7/2009(H1N1)-like; 1,424 were A/Perth/16/2009(H1N1)-like; 2 were A/Brisbane/10/2007 (H3N2)-like; 47 were B/Florida/4/2006-like (B/Yamagata/16/88 lineage), 50 were B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 303 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage). *EuroFlu weekly electronic bulletin*

Human Avian Influenza Updates

A new case of human A/H5N1 avian influenza infection was reported by the WHO this week from Indonesia. The case was a 2-year-old male from Riau Province who developed fever on April 17, 2012, was hospitalized on April 21, and died on April 27. Preliminary findings from the epidemiological investigation indicate that the child's parent's are quail egg vendors. *WHO Avian influenza situation updates*

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2011-2012 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2011-2012 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.